# MAIN CURRENTS
## IN MODERN THOUGHT

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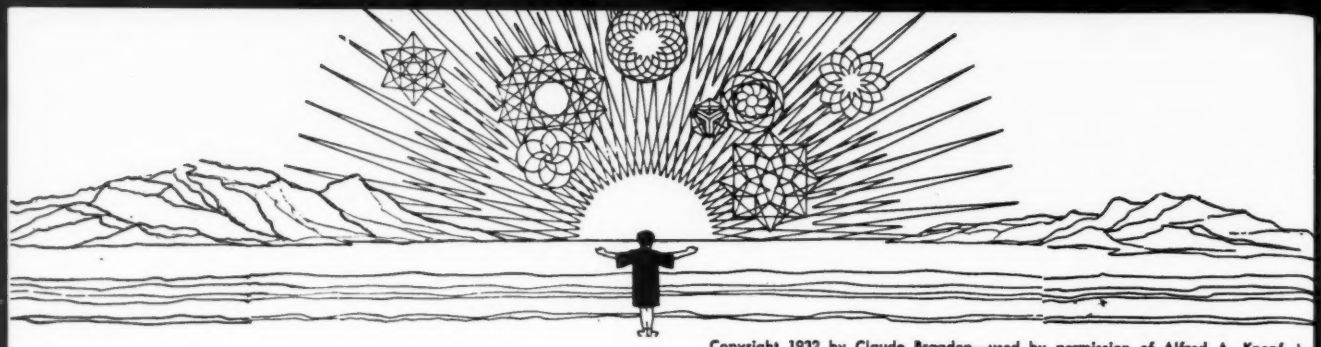

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# MAIN CURRENTS
## IN MODERN THOUGHT

**A cooperative journal to promote the free association of those working toward the integration of all knowledge through the study of the whole of things, Nature, Man, and Society, assuming the universe to be one, dependable, intelligible, harmonious.**

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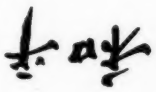
# SELF-REALIZATION AND THE INNER PROCESS OF PEACE

Chung-Yuan Chang

## The Achievement of Harmonious Relationship Between Reality and Appearance in Art and Life

THE word Peace in Chinese is *ho p'ing*: 

*Ho p'ing,* more precisely, means harmony and tranquility. In a relative sense it is the opposite of discord. Harmony and discord through their polar relationship successively and ceaselessly interact to create the history of mankind and the advancement of the world. The highest sense of peace is what we might call, in the words of Whitehead, "a deep underlying harmony," which is inherent in both man and the universe. It is the "ground" of all harmonies, from which emanates the all-expanding energy that constantly creates a new universe. Without it nothing that is real can be achieved. It is invisible and unfathomable beyond the realm of discursive thinking. It can only be experienced as a profound inward feeling, an immediate reflection of deep metaphysical insight, which is unverbalized and yet momentous in its action. We cannot define and point to it, but through poetic and figurative expression, our inner being may echo the tone of the inner realm of those who achieve this sense of peace. Let us listen to the inner voice of Li P'o (701-762), the great poet of the T'ang Dynasty:

"You ask me why should I stay in this blue mountain.
I smile but do not answer. O, my mind is at ease!
Peach blossoms and flowing streams pass away without trace.
How different from the mundane world!"

The sense of delight of the poet cannot be expressed in words. It is the deep underlying harmony of the nature of all things, in which there is no record of blossoming or fading peach flowers, and no lament upon the symbolic meaning of the never-returning stream, such as Confucius once made while standing at the bank of a river: "It passes on like this, never ceasing, day or night!" The immediate reflection of the highest sense of peace is identified neither as discursive understanding nor as sentimental emotion, but rather as an instantaneous insight into truth, which makes us feel infinitely blessed while experiencing it. It is our absolute mind which identifies all differentiations, and is unconditioned by any dichotomies or opposites. The poem of Li P'o, however, could not serve as a *kung an* or *koan* in Japanese according to Zen doctrine because, on the one hand, the poet smiles and gives us no answer; on the other hand, he tells us how delightfully his mind is at ease, that the world in which he lives is delightfully different from the mundane world. His mind still holds something enchanting and yet is not entirely free from it. The following poem of Wang Wei (699-759) will serve as an example of how indescribable is the absolute mind.

"Of late I deeply devote myself to quiescence.
Nothing in the world concerns my mind.

The breeze from the pine woods blows my sash;
The mountain moon shines upon my harp.
You ask me to explain the reason of failure or success,
The fisherman's song goes deep into the river."

To involve one's self in the disputatious dichotomies of failure and success, one would be trapped in endless complexity. Instead, when our poet gives his answer he only mentions something else, irrelevant to the question which is put to him. Although he did not say that his mind is at ease, and that the world in which he dwells is different from the mundane world, we can feel the unfolding inner realm of our poet in which nothing is contained. His mind might be compared to a pail of which the bottom is broken through. This answer without an answer is the most effective description of the deep underlying harmony of our poet, Wang Wei, and the poem is just its reflection, the product of the absolute mind.

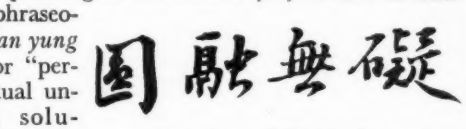
TURNING from poetry to another art, perhaps we can illustrate the reality of the deep underlying harmony found in Chinese painting. Here we have a concrete and direct comprehension of the power of the highest sense of peace. When an artist introduces certain fineness of form or color into the welter of incoherent fragments entering into our experience with an existential unity, this process of refinement gives us an apprehension of perceptual values and feelings. However, our aesthetic pleasure is derived from mere spatio-temporal pattern of sense. The harmony achieved from "the pattern sense" is a "qualitative harmony," the harmony of the lower senses conditioned by objective situations. But this is a relative harmony and is constantly subject to change and disorder outside its pattern or form as imposed by the

artist. On the other hand, in Zennist or Taoist painting, a straight line of bamboo or the gnarled lines of a pine tree become no merely visual impression and no merely physical sensation to be communicated. When we stand before the paintings of Liang Chiai or Ma Yuan of the twelfth century, our intuition does not draw us outward to analysis of conceptual components, but turns our mind inward to feel something in us unfolding the mystery of our own hearts. The mystery in this opening secret of our hearts is not due to the particular beauty of the picture, but to its wholeness, its freedom of motion and freedom of expression, overflowing and removing the mutually excluding opposition between the painting and ourselves. Thus we throw our whole being into the beauty and move along with it. To exemplify this feeling we have Laurence Binyon's personal experience to speak to us:

"I recall a little painting of uncertain date but inspired by a poem of Wang Wei's, eighth century poet-painter; the subject is just a sparse wood of stunted trees on a flat foreland; misty water and still sky. Nothing of what to the average mind is beautiful; yet in this foreland scene there was something strangely moving, just because the painter had absorbed the solitude of trees and water into himself. He had painted it internally, so to speak, not as something alien and seen from the outside." Binyon says further: "With Chinese, space often becomes the protagonist in the design. It is not final peace, but itself an activity flowing out from the picture into our minds, and drawing us into a rarer atmosphere. It is tranquilizing, but even more so, it is exhilarating."[1]

What is this atmosphere which moves from objects painted to the painter himself? And thence from the painting to the observer? This is the movement of the deep underlying harmony which interfuses and interpenetrates between man and man, between man and things. It emerges from immediate reflection of absolute reality of ourselves. There is a Zennist saying, "Willows are green and flowers red." But at the same time it is said: "Flowers are red yet not red; willows are green and yet not green." The first affirmation is to indicate the facts of our experience accepted as "suchness." It is the immediate reflection. The second statement involves both affirmation and negation, but they are not contradictory to one another. It helps us, rather, to enter the realm of absolute reality. Because in the realm of absolute reality there is no need for the process of rational analysis or discursive thinking. What is affirmation is negation and what is negation is affirmation. This is true even on so elementary a level as the flowers and the willows. Both are red and not red, both are green and not green. It is by such simple steps that we enter into and unlock the nature of boundless infinitude, thus losing our ego-selves. It is in this direction that lies the cultivation of spiritual intuition and the achievement of absolute freedom.

What the painter produced is the absolute reality of objects as he felt them through his absolutely free play of intuition. Through the medium of the painter's strokes with his "inner brush" this becomes something that moves with absolute directness and force into the mind of the observer. Binyon says: "What he (the painter) put into his work comes out from it and flows over into our minds; and we recognize something which cannot be called intellectual only, sensuous only, or emotional only; it is wholeness of spirit which goes out, free and unafraid, into wholeness of universe."[2] This wholeness of universe is what he means when he refers to a "rarer atmosphere." It is what Whitehead refers to as the underlying harmony. And the movement from object painted to painter, from the painting to the observer, is, to turn to Buddhist phraseology, *Yuan yung wu ai,* or "perfect mutual unimpeded solution" of things, a manifestation of Nature's mysterious capacity of interfusion and interpenetration.



In the history of Chinese painting we have numerous illustrations that reveal this sense of spiritual intuition, a "wholeness of spirit" which moves freely and fearlessly into a "wholeness of universe" in a way that Laurence Binyon has described for us. Perhaps one more illustration will help us. It is, perhaps, the most radical story of its kind.

During the seventh century Wu Tzo-tzu (d.792) completed his last masterpiece for the royal court. It was a landscape painted on a wall of the court. Wu Tzo-tzu drew aside the coverings and the Emperor gazed at the vast and awesome scene and its magnificent detail: woods, mountains, limitless expanses of sky speckled with clouds and birds, and even men in the hills. "Look," said the artist pointing, "here dwells a spirit in a mountain cave." He clapped his hands and the gate of the cave immediately flew open. The artist stepped in, turned, and said, "The inside is even more beautiful. It is beyond words! Let me lead the way!" But before the Emperor could follow or even bring himself to speak, the gate, the artist, the painting and all faded away. Before him remained only the blank wall with no trace of any brush marks.

This charming story is intended to reveal directly to us that within the outward appearances of all beauty there lies the "rarer atmosphere" or the unity of background, as Binyon calls it elsewhere, which serves as the ultimate reality of all appearances. It is through this ultimate reality that our minds are opened to see our own "wholeness of spirit," and enter into the wholeness of the universe, the deep underlying harmony of all things.

ACCORDING to the Taoists, our daily life gains its significance by being rooted in a "deep underlying harmony," or ultimate reality. So long as we deviate from the world of reality, we can never reach true peace. What we may, and often do achieve is a

[1] Laurence Binyon, *The Spirit of Man in Asian Art,* p. 98

[2] Ibid, p. 99

kind of pseudo-harmony, which we often confuse with reality. It is only when the absolute reality impresses itself upon our daily life in a lively manner—that is, through our activities—that our daily life gains its real value. Only in this way will we be able to order our lives with an inward harmony and a higher sense of peace. In the second chapter of Chuang-tzu, we have a metaphor illustrating the inner harmony between absolute reality and outward activities:

"Once the Penumbra asked the Umbra: 'Previously you were walking and now you have stopped; previously you were sitting and now you have stood up. Why is it that you lack stability of intention?' The Umbra replied: 'It is because what I do is in accordance with the movements of something else. . . . My accordance with the movements of something else is like the accordance of the snake with its scales and the accordance of the cicada with its wings. How can I know why I do one thing and not the other?' "

The actions of the Umbra, in movement or at rest, sitting down or standing up, are the various appearances of something else which is the *ultimate reality*. Appearance must belong to a reality—indeed it is an *expression* of reality. Appearance must, we see then, be one with reality.

This is exactly what Lao Tzu said in the first chapter of the *Tao Te Ching*:

"Oftimes without intention I see the wonder of Tao.
Oftentimes with intention I see its manifestations.
Both of these are the same in origin;
They are distinguished by names after their emergence.
Their identification is called mystery.
From mystery to further mystery there is an entrance to all wonders."

To explain this mystery of the identification of appearance and reality, we may find it helpful to turn to some of the basic concepts of the Hua Yen School of Chinese Buddhism which was developed during the seventh century.

First, let us look at the two basic ideas, *Shih* and *Li*.

Li—Reality

Shih—Event

*Shih* means event, or form. In the ordinary sense it is an event which refers to a happening. But in the *Book of Changes* we read, "That which is solved by changes is *Shih*." (Hsi T'su) This definition of *Shih* is similar to the concept of event as expounded by Whitehead. "A molecule," Whitehead says, "is an historical route of actual occasions, and such a route is an event."[3] This is to say that an event is really its actuality in the process of motion. Event is more than its static condition. The ever-changing event is what is called *Shih*. It is particularity in action.

*Li,* in its ordinary sense, is reason or principle, but by the Hua Yen School it is often used as the Absolute or Reality, and eventually it means Void or Non-Being. It always stands contrasted to *Shih* and, therefore, is universality in action, all-embracing and all pervading. Hsuang Shih-li, a well-known Chinese philosopher, in his *Treatise on New Mere Ideation,* expounds *Li* as the essence of Reality, which consists of both Void and Silence. Void does not mean nothingness in the sense that something once was and now is not. It is the ontological foundation from which event or form manifests itself. Therefore, *Li* and *Shih* are not separate existences, but together they comprise the one. Daisetz T. Suzuki clarifies this idea saying that *Li* is not separate and independent in existence. It does not mean extinction—it always exists in conjunction with the individual event or form and coexists with it. To those who live merely in the world of sense, *Shih* is no more than the existence of individual objects. To the Hua Yen School, on the other hand, these individual objects are placed in the *Li* world in such a way that *Li* is *Shih* and *Shih* is *Li,* in a state of "perfect mutual unimpeded solution." The theory that *Li* and *Shih* or Reality and Appearance are essentially one is clearly phrased by Francis Herbert Bradley:

"The Reality is nothing at all apart from appearance. . . . Reality appears in its appearances, and they are its revelation: and otherwise they also could be nothing whatever. . . . And Reality is one Experience, self-pervading and superior to mere relations. Its character is the opposite of that fabled extreme which is barely mechanical, and it is, in the end, the sole perfect realization of spirit."[4]

Thus two elements, *Li* and *Shih,* or Reality and Appearance, though they are both necessary aspects of the one Being, according to the habits of the intellection they cannot, in truth, be separated entities. Nor can they be scrutinized or removed from one another without obscuring their essential nature. To illustrate the absolute oneness between *Shih* and *Li* we may refer to the parable of the Golden Lion.

In the seventh century when Fa Tsang, the founder of the Hua Yen School, was lecturing at the royal court, he was faced with the difficulty of expounding the theory of the "unimpeded mutual solution" of *Shih* and *Li,* or the identification of Appearance and Reality. Fa Tsang pointed to a golden lion in the court and delivered his famous parable. Gold symbolizes Reality, and the lion, he said, symbolizes Appearance. Reality is formless by itself but assumes any form which circumstances give it. Similarly, gold has no "nature of its own" but is shaped into the form of a lion as its appearance.

The existence of the lion is wholly dependent upon the existence of gold. Without the gold there would

[3] Alfred N. Whitehead, *Process and Reality,* p. 124

[4] F. H. Bradley, *Appearance and Reality,* p. 489

be no lion. That is to say, without Reality there can be no existence of Appearance. On the other hand, without the form of the lion there is no expression of gold. Appearance reveals the existence of Reality. The gold and the lion harmoniously co-exist; they are merged together, but this by no means impedes either from being itself. When one sees the lion, the gold is neglected. When one sees the gold, the lion is obscured from sight. When the mutual conditioning of gold and lion is in perfect harmony, the dichotomy of *Li* and *Shih* is gone. Reality is Appearance, Appearance is Reality. No words can express this identification—our mind is simply and abruptly enlightened. This is what Chuang means when he speaks of "Heavenly identity." "Heavenly identity" is what Lao Tzu calls the "mystery," the same origin of Reality and Appearance—what Whitehead calls the deep underlying harmony.

It is this idea of "mystery" that Chinese painters and poets use to such rich advantage in their work. The "sparse woods, still sky and misty water" which, Binyon says, so perfectly identify the "rarer atomsphere" of the painting, has its parallel in the story of the Golden Lion. The atmosphere reality of the painting penetrates perfectly into the form of tree, of sky and of water, just as the gold is completely identified and nothing hinders their mutual unimpeded solution. It is through this wholeness of spirit that we are led to see the harmony of harmonies, the origin of all beauties.

WE have been trying to see what the Taoist means when he speaks of the "underlying harmony" of Reality. This task is necessarily a difficult one, especially when we begin with the realization that it is impossible to put into words, and that it can best be approached by indirect suggestion. In order to understand this better, we might turn briefly to Bradley's speculations on the nature of Reality, even though his approach is a rational and analytic one.

Bradley, after a great deal of hair-splitting on the nature of truth and thought, realizes, even as the Taoists do, the limitations of thought in coming to grips with Reality. In *Appearance and Reality,* he clearly maintains: "Reality is above thought and above every partial aspect of being, but includes them all. Each of these completes itself by uniting with the rest, and so make the perfection of the whole. And this whole is experience, for anything other than experience is meaningless."[5] Bradley attempts to reach Reality by intellectual analysis, but he discovers the limitation of attainment inherent in discursive and rational thought. It is rather by "experience" or, as he says elsewhere, a "higher immediacy" by which we grasp the nature of Reality. This wholeness of experience must be immediate, like feeling, but, not like feeling, immediately at the level below distinction and relation. In the process of aproaching Reality we inevitably reach a stage which is beyond thought, where mere intellection becomes helpless, and we can only intuitively experience it. Therefore, at the conclusion of his work, *Appearance and Reality,* he announces openly that Reality is spiritual. What is this realization of spirituality of which Bradley speaks? Is it not the process of the awakening of new consciousness? In Chinese philosophy, the new consciousness is not conceived of as new at all. It is the self-consciousness to be realized to the fullest depths; that is, consciousness itself turning inwardly into itself. In Zen's expression, it is the seeing of one's own "original face" before one is born. Therefore, the realization of spirituality is simply the consciousness coming to its own unconsciousness. In the Taoist expression the former is *T'ai Chi* or ultimate, the latter *Wu Chi* or the Ultimateless. The perfect realization of spirituality as one Experience is expressed by Lao Tzu as a "Return to the Ultimateless."

In this connection I must point out that we are neither to identify Bradley's system of Reality and Thought with the system of Chinese Taoism, nor are we to neglect the self-contradictions in his discussion of Reality, as pointed out by his critics. But beyond the limitation of intellectual analysis, Bradley proceeds from thought to thoughtless, "beyond thought," and from intellection to high immediacy or "one Experience."

It requires a great mental effort on our part to view all things, in their dissimilarities and relations, as one thought. This thought clearly contains no boundary of differentiations and distinctions. It is spiritual, "a sole perfect realization of spirit." When the mind reverses its usual course and, instead of dividing itself externally, goes back once more to its inner unity, it has begun to move to a state that we may call "one-thought-viewing." In fact, our logical as well as practical consciousness is overdevoted by far to thought and analysis. We tend to direct reality into bits and pieces in order to better understand them. These sections, when they are returned to the wholeness of things, tend to stand out awkwardly and conspicuously. They are no longer a part of the oneness.

IT is only when Oneness is reached that we have Enlightenment. This is our inner awareness of a higher order than that which is habitually exercised in acquiring relative knowledge. It is a faculty both intellectual and spiritual. Through this faculty, we break loose from the bounds of intellection. Intellection is necessarily dualistic because it always implies subject and object. But if we can view the "ten thousand things" in one thought, then there is no longer a separation between knower and known. Here, in this connection, Bradley says, too, that immediate experience opens the one road to the solution of ultimate problems. It is knowing and being in one, a direct awareness which is non-relational, and which is neither explainable nor describable. What then is this non-relational and inexpressible Oneness? It is the origin of all beauties, all truth, and all advancement. This viewing of all qualities in one thought which finally cuts off the hopelessly entangling logical mesh by merging all difference and likeness into the absolute oneness, has been stressed in the *Tao Te Ching.* In chapter 39 we read:

[5] F. H. Bradley, *Appearance and Reality,* p. 493

"In the ancient times there were those who achieved the One.
Achieving the One, Heaven was made clear,
Achieving the One, Earth was made stable,
Achieving the One, God was made spiritual,
Achieving the One, the valleys were made full,
Achieving the One, all things lived and grew. . . .
All of them became so through the One.
Without purity, the Heavens would shake,
Without stability, the Earth would quake,
Without spirituality, God would crumble,
Without fulfillment, the valleys would crack,
Without the power of growth all things would perish."

Oneness, as Lao Tzu saw it, was the primordial source of all things, the Mother of the World. In the words that we have used, it is the harmony of harmonies, the highest sense of peace, which is invisible and unfathomable. Lao Tzu described it further in these words:

"The countenance of the Great Achievement
is simply a manifestation of Tao.
The thing that is called Tao
is elusive and evasive.
Evasive and elusive,
Yet latent in it are forms.
Elusive and evasive,
Yet latent in it are objects.
Dark and dim,
Yet latent in it is the essence.
The essence is quite real,
Therein is the vivid truth.
From ancient times until the present,
that which is called Tao has never ceased to exist.
Through it we see manifestations of all the admirables.
How do we understand the way in which
the admirables become admirable?
It is through Tao."

Tao is the Reality from which all admirables are manifested. Latent in it are forms, objects, essences, but it is formless and imageless of itself. We can understand it only through immediate intuition, not through intellection. When we refer to the explanation of peace by Whitehead, we can better understand this ancient idea. Whitehead says:

"There is the deep underlying Harmony of Nature, as it were a fluid, flexible support; and on its surface the ripples of social efforts, harmonizing and clashing in their aims at ways of satisfaction. . . . amid the passing of so much beauty, so much heroism, so much daring. Peace is then the intuition of permanence." And further: "The essence of Peace is that the individual whose strength of experience is founded upon this ultimate intuition thereby is extending the influences of the source of all order."[6]

NOW we see both the Eastern and the Western philosophers lead us to believe that the essential truth that peace demands is the conformation of Appearance to Reality. There is the absolute Reality from which all multiplicities spring. Further, Reality cannot be reached by rational analysis, but only by immediate intuition, or enlightenment.

According to Taoist philosophers, such as Lao Tzu and Chuang Tzu, Enlightenment is a growing consciousness of a new power in the mind. To them the opening out of the mind through the confrontation of the unexpected is like opening a door onto a new world of experience. There is no need for logical analysis or even meditation. There are unknown recesses in our minds which lie beyond the threshold of intellectual construction of consciousness. Whatever field of consciousness is known to us is generally filled with stereotyped conceptions. To rid ourselves of these, Chinese Taoists say we must move to some nearly inaccessible region of the mind, to which they can only point. The experience is something like this: a tap sounds at the gate of consciousness, and though the door be tightly locked, the sound reverberates throughout the entire being of the individual.

As long as the mind is not free to perceive this fountain of life in this inaccessible region, we are divided against ourselves. Instead of grasping the key to the secrets of creation, the mind is hopelessly buried in the superficiality of things. There is a story from the classics of a meeting of Confucius and Lao Tzu. When Confucius, not yet having achieved Tao, went south to see Lao Tzu, he was asked: "I hear that you are the wise man from the North; have you also received the Tao?" "Not yet," Confucius replied. The other went on, "How have you sought it?" Confucius said: "I sought it in rituals and rules, and after five years I had not yet achieved it."—"And how then did you seek it?" "I sought it in the principles of Yin-Yang, but after twelve years I had not yet found it." Lao Tzu then explained: "The reason why the Tao cannot be transmitted is none other than this: if there is not a presiding center within, it will not remain there." Lao Tzu continued: "It is fortunate that you have not met with a ruler fit to rule the world. The Six Classics which you mentioned are but the worn-out footprints of the sages of the past. The footprints were made by the shoes, but they are not the shoes themselves. Hawks stare at one another and without moving their eyes their young are conceived. There is a male insect which chirps with the wind while the female chirps against it, and their young are thereby produced. There are hermaphroditic animals which produce their own young independently." It was said that Confucius reflected upon these remarks for a period of three months and then returned to Lao Tzu and said: "Magpies and their kind hatch out their young from eggs. Fish reproduce their kind by the impregnation of their own milt. The wasp gives rise to itself by the process of metamorphosis. When the younger brother is born, the elder brother cries." Lao Tzu was so pleased with his answer that he exclaimed: "It is well indeed! You have grasped the Tao."[7]

This dialogue seems illogical and nonsensical to us. Yet it was by means of this that the mind of Confu-

[6] Alfred N. Whitehead, *Adventures of Ideas*, p. 360

[7] *Chuang Tzu*, chapter 14

cius, according to Chuang Tzu, was unfolded to the full bloom of enlightenment. Confucius' former methods of learning were built upon a logical basis and approachable through rationality, but they were of no assistance to him in his spiritual life. Lao Tzu was thoroughly aware of what Confucius failed to see; that he was hopelessly trapped in the realm of relativity and superficiality, and was not free to dive into the recesses of the mind where no logical analysis can ever be reached. An iron wall was needed to block his every intellectual effort. Lao Tzu's nonsensical statements concerning the reproduction of hawks, insects and animals served to build that iron wall. Thus the march of thoughts from Confucius' former habitual consciousness was suddenly excluded. Troubled and agitated, he wanted to break through the wall. Throwing his entire being into the deepest resources of his nature unexpectedly opened up an unknown region in his mind; it was the birth of a new consciousness, which was truly beyond mere intellection. After three months of "self-cultivation" Confucius returned to Lao Tzu and made the same kind of unconventional statement as had his master Lao Tzu: "When the younger brother is born, the elder brother cries."

This way of awakening the new consciousness is direct and far beyond the approach of intellectual analysis. It also saves the learner from sinking into a trance and becoming absorbed in mere contemplation.

If one seeks merely for the transcendental, it can be attained, but the process may sever you from the world. This is simple annihilation of the self. For those who are in the prison of the relative world, the approach of "beyond the opposites" would open the "third eye," in order to transcend earth-bound relativity, and enter into the realm of Infinite. But when one is trapped, due to one's own aspirations for the Infinite, then the key to enlightenment is to bring one back to life itself. The secret cannot be found in intellectual abstraction and metaphysical subtlety; the truth of Tao really lies in the concrete realities of our daily activities.

This idea of naturalness was further applied to human relations by neo-Confucianists. As Wan Yang-ming of the fifteenth century said: "According to Confucianism, between father and son we find love; between ruler and subordinates, righteousness; while with husband and wife, each pursues his own duty. How can we say that there is an attachment through a relationship so natural as that between father and son, ruler and subordinate, husband and wife?" This conception of naturalness was particularly stressed by Taoist philosophers.

We may turn to a simple and amusing story to learn a basic lesson. A student of Zen approached his Master one morning with the question, "What is the essence of Zen?" In turn, the Master asked, "Have you finished your breakfast?" "Yes," was the reply. "Then," answered the Master, "go and wash your dishes." The Master was not being flippant or indifferent. He was simply saying that it is naturalness that leads to enlightenment. As Kuo Hsiang, the neo-Taoist philosopher of the third century, once said: "The universe has all things as its content, and all things must take 'self-so-ness' as their norm. What is spontaneously so, and not made to be so, is naturalness."

I should like to illustrate this by the following analogy in the second chapter of the works of Chuang Tzu:

"The breath of the Great Earth," says Tzu Ch'i, "is called the wind. At times it is merely inactive. But when it is in action, the ten thousand crevices of the earth resound and roll with a mighty roar. Have you not heard it in the outburst of a gale? In the projecting bluff of the mountain forest, the hollows of the huge trees are like nostrils, mouths, and ears, others like beam sockets, goblets, mortars, or pools and puddles. The wind whirls through them, like swirling torrents of whizzing arrows bellowing, shouting, trilling, wailing, moaning, roaring, purling. . . . Finally the tempest is over and all crevices became quiet and still. . . ."

"Now," asked Tzu Yu, "since you said that the music of Earth comes from the sounds made by the hollows and crevices, and that the music of Man comes from bamboo pipes and flutes, I venture to ask of what consists the music of Heaven." "The Heavenly music," Tzu Ch'i answers, "blows through ten thousand apertures and through each in a different way. Each of them is self-assertive. What need have they for any agency to excite them?"

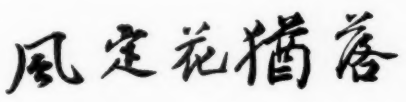
What, then, is the Music of Heaven? It is nothing more than the music of Earth and the music of Man asserting themselves. In the relative sense, we see the difference between the music of Earth and the music of Man. But in the highest sense there is a unity, or harmony, between them. When each, whether Earth or Man, spontaneously fulfills its natural capacity, the Great Harmony is attained. Self-assertion is identified with diversity, yet within all diversities there is unity. Unity is invisible, and diversity is tangible. Without diversities there is no expression of unity. Without the invisible unity there is no possibility of the Great Harmony. Whitehead says: "The Great Harmony is the Harmony of enduring individualities connected in the unity of background. It is for this reason that the notion of freedom haunts the higher civilizations. For freedom in any one of its many senses is the claim for vigorous self-assertion."[8] This is what Chuang Tzu implied when he speaks of the music of Earth and the music of Man in connection with the "unified background" of the music of Heaven.

This parable of Chuang Tzu has not been very well understood. An interpretative commentary by the great seventeenth-century scholar Yao-Nai, however, provides an enlightening vision: "To a man who has

[8] Whitehead, op. cit., p. 362

achieved the Self of Non-Self, all music, whether from pipes or flutes or the wind through nature's apertures, is Heavenly music. But to the man who has not achieved this Non-Self, these sounds are still heard as the Music of Man and the Music of Earth."

Two lines from ancient Chinese poetry may serve as appropriate ending:



"The wind ceases and yet the blossoms fall.

The birds are singing, and the valley is still more silent."

These two lines were written before the fifth century by two different poets. In the eleventh century Wang An-shih (1021-1086), a famous scholar and statesman, paralleled them as a couplet and offered an interpretation. The first line, he said, indicates action within non-action; the second line non-action within action. His interpretation revealed the underlying harmony of our two poets and the feelings which they expressed in their rhythms. An important point, however, is that the two poets were children. The first line was written by Hsieh Chen when he was only eight years old. Their commentator, Wang An-shih, was an old retired gentleman, who penetrated into the depths of the hearts of these young poets who had lived six hundred years before him. This fact tells us that there is an interfusion between the inner harmony of a child whose innocence and simplicity have not yet been tainted and the wisdom of an old man who reverts to the simplicity and innocence of childhood. When we understand this and reflect immediately, into our own experience, the harmony of action within non-action and non-action within action, we feel ourselves at one with both our poets and their commentator, who in his turn is separated from us by another nine hundred years. What is this power of interfusion, free from limitations of time and space? Is it not the highest peace in action?

Dr. Chang received his Ph.D. from Columbia, and subsequently served as Professor of Chinese Philosophy at the Asian Institute and as lecturer on Taoist Philosophy at the Eranos Congress and the C. G. Jung Institute in Switzerland. He has spoken and written widely on Taoism and Buddhism, and is generally considered to be one of the foremost Taoist scholars today. The foregoing article has been slightly condensed from Dr. Chang's contribution to the latest Eranos *Yearbook,* soon to be published by Pantheon Press.

# HUMAN EDUCATION

C. Gattegno

## Some Notes Prompted by a Consideration of Educational Problems in Fast-Developing Countries

*Ed. Note*: The proposals contained in this study were occasioned by some special educational problems faced by one of the many countries just entering upon a stage of growth from a rural, primarily agricultural economy to one of expansion and industrialization. It is the specific result of a mission which Dr. Gattegno undertook the auspices of UNESCO.

Nevertheless, all thought about education must take its roots in a philosophy which is universal. An underdeveloped country would do itself a disservice if it neglected the larger aspects of its educational program, and concentrated only upon quickening the growth of its literate population. Such an attitude might encourage imitation of the methods employed in other countries, thus neglecting opportunities to develop an approach which can use concepts and materials of proven value, and yet allow the possibility of fresh solutions. The cultural framework which surrounds the educational problems of different countries presents an original challenge. It should never become an arena wherein older systems vie with another, finally to produce a mixture that is contrived and non-indigenous. Above all, unique cultural and ethnic values must be preserved while the process of development is going forward.

These are some of the problems which have been confronted by Dr. Gattegno, who has been concerned for some years with educational theory and methods, and is the author of a number of books on mathematics teaching. He has now in preparation a book which treats more extensively the ideas introduced in this article.

A fast-developing country, such as is the subject of this study, may be said to be made up, principally, of unspoilt rural settlements, of a few provincial market centers, and a handful of towns and cities. Its resources are great, yet largely untapped, and its people, though mainly unlettered, are intelligent, keen and proud, with many profound, ancient and respected traditions.

Rural life is highly organized and satisfying to the majority. This asset, of great importance to the country, may be threatened if modern Western outlooks are forced upon the people through the school systems and curricula chosen for them. The aim for any people is not only a longer life through diminution of disease and improved standards of living, but the *good* life, with all that this implies. This means that the planners of education must express their aims clearly, so that immediacies are not taken for goals, and training is not mistaken for education.

Education per se is concerned with human needs and values as well as with techniques. In countries whose technological development is not yet up to European standards, the tendency is sometimes to accept the idea that the West is right because its techniques are successful. It would be more important, and in the long run more successful, to seek a view that relates material advance properly to the peace and welfare of the people as a whole.

SINCE schools are an important agency of education, they will obviously be a powerful instrument in meeting the challenges created by national policies of development as applied to country areas. Together with churches of all denominations and community organizations, which can be counted on to perform the task of maintaining traditions, schools must provide the means to integrate old and new values. Thus the mere effort to train village teachers should be replaced by the intent to educate future community leaders.

Schools in town are even less the sole agencies of education, since there are so many other media available for the communication of ideas. In urban schools, the task is not so much to preserve traditions, which are under bombardment from so many different quarters, as to create a balance for the individual by providing a sound means for personal development which is compatible with the changing pace of life. The fact that urban schools retain their students for a longer period of time than in rural districts is helpful in itself, but their influence can only be thoroughly beneficial if they are able to provide a thoughtful and functional syllabus of progressive study.

THE hope is that rural schools will be able to keep pupils for the six years of elementary education. This restricted length of time necessitates the most thorough use of the hours of study which are available. The mornings should be used for the acquisition of skills in literate subjects, such as reading, writing, mathematics, knowledge of nature, religion, history, and local studies, using renewed methods proper to the situation. The afternoons should be used for the integrative development of the individual in the community, utilizing such opportunities as can be made for excursions, collection of folklore data, establish-

ment and maintenance of a local museum, gardening projects, animal husbandry such as bee-keeping, health projects, improved food preservation, and so on. The arts and handicraft skills can be developed in relation to all these activities, and when means permit, exhibitions and performances can be organized with the assistance of church and community associations. All these and other well-known methods can be integrated to make the school a real community center, but only if the human relations are of the right sort. In order to insure this most important element, special education for rural teachers is required, to offset their natural limitations of youth and strangeness to the community, which sometimes make their acceptance by the people slow. When rural teachers grasp the full implications of the job before them, they usually respond wholeheartedly. Their enthusiasm and sense of dedication remove feelings of boredom, overcome misunderstandings, and help them to enjoy a fuller life within the community.

IN more populated centers, what is most wanted is a thorough "human education" to replace the vocational bias of the schools. It should be said at once that while a purely vocational education is bound to fragment the personality and create acute personal and social problems, human education is not and cannot be complete if it does not give the individual the means of earning a livelihood.

Because the kind of country we are considering is on the threshold of an expanded program, both economic and educational, there is opportunity to institute an educational system which goes beyond the limited aims of meeting immediate economic needs. An extended and far-seeing program will prove much less costly in the long run than one designed only with the present situation in mind, for this will only have to be re-designed in the future to cope with the unbalanced development which it will create in its citizens. A human education must provide modern answers to the problems which civilization presents to all of us, and at the same time incorporate the universal life-values which have been a tradition in religious teaching.

More explicitly, a human education must seek to cultivate the aptitude present in every individual to live a full life of the spirit within each level of experience. To this end, all levels must be related to the whole man.

INSTEAD of making a concession to the needs of the body through physical culture, in human education the body is recognized as the instrument and the incarnation of the spirit in man. Through knowing and respecting the capacities and limitations of the body, it is possible to extend the range of its experience so that the individual can link it more harmoniously with his own levels of creativity. The object of this kind of *somatic education* is not a competitively heightened type of performance, but rather a more complete knowledge for the individual of his range of mastery over his own body. Enlightened awareness of this kind can lead to increased mobilization of the self through perfection of the arts of breathing, walking, climbing, crawling, jumping, swimming, relaxing, gathering strength, and enduring. Thus physical challenges may be overcome without strain or undue fatigue.

Somatic education aims at knowledge of bodily action, so that in later life this action may have the same effortless quality as the physiological functioning which has been learned spontaneously during the first months or years of life.

WITHIN human education, the training of the intellect is based on opposite premises from those which assume that academic performance must be based upon high I.Q. averages. A universal education cannot afford to allow social or academic prejudices to blur reality. The work of the intellect is an attribute of every functioning mind. It is only necessary to think of educating the intellectual powers of each individual through the means of exercises that extend the range of those powers in their normal, spontaneous state. This should be the aim and the method, rather than reliance upon the set exercises which have figured so largely in formal education until now. Children use, at a very early age, analytic powers to distinguish likes from unlikes; they experience the apprenticeship of a whole language with complex structures and appropriate symbols. The symbolic games and spontaneous drawings which they create at the age of five to seven are of such complex structure that no school work, including mathematics, can ever compare with them.

New methods of presenting languages and mathematics can prolong spontaneous intellectual activity. Children are able to take these easily in their stride, demonstrating that only ignorance on the part of teachers has confused the issues with regard to education of the intellect.

Experience in the teaching of languages and mathematics proves that what was attained only by the exceptional child in the past can now be achieved by almost every child. For a good deal of scientific and technological knowledge can be presented in terms of awareness of the self in dialogues with the universe of energy. Thus it is now possible to achieve in five years of study—say from the ages of eleven to sixteen—a range of experience for which it has been assumed that at least twelve years of study are necessary. Because the inspiration is different, because the experimental background deliberately invokes the learning mind, the knowing spirit, rather than response to formal teaching and syllabi, results are distinct and unique.

By intellectual education, we mean education which provides the extension of the powers of the intellect confronted by real and multifarious problems, by wide realms of analytic knowledge concerning classifications, logical and empirical reasons, hypothetical thinking about relations (mathematics), about sense data (physics), and about growing and varying systems (biology, history, sociology).

BUT if man can think, still more can he feel and sympathize. In human education, direct experience of the dynamics of one's own emotions and of mastery of the self over emotional life is deliberately cultivated.

Since, as the child grows, he is not only accumulating experience (which seems to suggest that it is all of one kind), but also recognizing the quality of experiencing, he becomes capable of living his experience either directly or vicariously. This he could already do symbolically by the extension of his actions, but now the life of others, if presented in terms that are true to his experience, becomes integrated into his own life. A child, a person, grows by contact with others, just as he grows by suffering and by solving the problems presented in relating to others and to himself.

History is a field of predilection for growth. Therefore if we select for our pupils those aspects of history which can become a "temple of greatness" for them to visit and live in, the whole of their spirit may be directed towards knowing what is greatest in mankind. That spiritual contagion which moves in some men so deeply and clearly can give those it touches the dimensions of devotion, of courage, of self-denial which all religions say are within the reach of everyone.

Literature, in which art can make man even larger than life, is able to extend intuition of the reality of others and of depths of experience beyond the limitations of personal existence. Great books have the power of inspiration because they move us deeply; they can change our lives either through what they bring to our notice or what they stir in us.

Education is much more than the acquisition of skills and techniques. No school can pretend to have educated its students if it has not been able to give them some experience of what, in every man, witnesses the work of the spirit. And more, it must be able to make the child aware that he, too, participates in that energy which makes the world identical with him, in the intimate sense that both are of one nature.

If human education has more to offer the child than traditional education, it lies in this: it never forgets that every child has the right to a full affective development—the development of his own humanity.

ART is another of the distinctive features of human education.

The unique contribution which art can make to the education of every child is that it keeps him always in touch with the springs of his own creativity. The value of artistic production is slight in comparison with the significance of a realization by the individual that his universe of experience is never complete, never closed. If others have been able to act upon their gifts in order to extend their range of understanding and achievement, and thus extract new meanings from experience, the child can do it also. The child cannot (and does not want to) be the equal of geniuses who have left their names and work for many generations, but he can meet himself in the dialogue with his own powers, transforming clay into shapes, colors into designs, sounds into melodies, movements and experiences into words, and silence into meditation and prayer.

IN short, the inspiration of human education can take hold of all subjects, all disciplines, and recast them into new formulae:

Geography leads to an awareness of one's habitat which starts by being the mother's womb, and ends by being the cosmos.

History nourishes individual awareness with the experience of others, and provides a perspective which limits the ego and discloses other ways of being.

Science enriches through knowledge of power over things, and gives an intimate relation between the mind and a universe in which man's penetration is extending further and further.

Mathematics is awareness of the dynamics of relationships, and furnishes in all men the means whereby experiences, colored by the senses, are replaced by a model in which only the relationships are preserved. On this model the dynamics of the mind allows new readings, which in turn lead to new awareness of the situation, and so to new action. These may mean, again, new power over things.

Languages are the channels of symbolic communication between man and man, becoming more accurate as the experience is more schematized. They are essential for elimination of the solitude of being.

Art is the field of the dialogues of the self with its own creativity.

Somatic education is a way to knowledge of one's body, which leads to the mastery of functions, and hence to harmonious being.

THIS list is neither exhaustive nor merely theoretical. In fact, each of the previous statements has been already developed into a body of techniques which could meet the demands of an educational institution. The philosophy has been implemented in the shape of curricula which have been offered specifically to a fast-developing country under study, wherein opportunities for a re-evaluation of the teaching profession are right at hand. Because there is a less rigidly established educational structure already in existence, a transformation is less likely to encounter resistence and opposition from traditionalists or entrenched interests. If the experiment is undertaken in accordance with the principles of human education enunciated above, its results should be of significance not only to other fast-developing countries, but to all nations whose concern for the welfare of their children leads them to a search for a meaningful philosophy of education.

These notes are only intended to stimulate discussion. A much more fully detailed treatment of each point would seem necessary in order to allow the internal consistency of the proposals to reveal itself, and thus permit a start upon their implementation by educators.

# IS GOD A PERSONALITY?

Sarasvati Chennakesavan

## Deity as the Personalization of the Non-Dual Reality

IT is not possible to indicate in a short paper like this the central motives of Hindu faith. Its aim is therefore more limited: to demonstrate in summary fashion some of the reasons why I feel that this view can be reconciled to the traditions of Western philosophy.

Even in the beginning, one has to face the difficulty of defining what Hinduism is, for its content has changed from age to age, and from group to group. But in spite of these changes, there has been a binding undercurrent linking together all these different expressions, without which it would be impossible to account for what Hinduism has achieved. The historical tradition of Hinduism goes back a long way into the past — over four thousand years. Its very name results from the fact that the original founders and followers lived in that part of the country drained by the river Sindhu (the Indus), and thus has more of a territorial connotation than a religious significance.

The essential Hindu attitude to religion is not primarily concerned with the outward observance of ceremonies or the acceptance of academic abstractions. It is rather a *darsana,* an insight into the nature of reality and an experience of that reality. This experience is self-certifying and carries its own proof. Yet it is felt that the seer must justify his inmost beliefs at the bar of reason, for without such intellectual justification, experience becomes merely a matter to be taken on trust. To the Hindu, such mechanical or blind faith is abhorrent and vitiates true religious experience. Hinduism teaches that there can be no sharp line of division between intellect and intuition, for both powers are characteristically human. This dialectic of belief, tradition, logic and life helps the Hindu to conserve his religious attitude in and through changes.

At a very early stage the Hindu became conscious that there can be many pictures of God. Yet he does not forget that all these pictures — sometimes quite contradictory—always refer to one ultimate Reality. One of the *Upanisads says* "God, the maker of all, the great spirit ever seated in the hearts of creatures, is fashioned by the heart, the understanding, and the will. They who know that become immortal."[1] Each person thinks of God according to his own capacities and traditions, in the context of his own personal and racial history. Therefore, while the Hindu may appear at first glance to be pantheistic he is not really so, for his belief is strongly rooted in the concept of one God known by several names. This tendency to search behind the manifold multiplicities for some *rationale* is evidenced even in the *Vedas,* the earliest extant Scriptures, wherein is articulated the fundamental cry of the searching spirit, "What God with our oblation shall we worship?"[2] The same question is raised again and again during the history of Indian philosophy, whose various systems of philosophy give varying reasons for accepting one idea of God or another. To the Hindu all descriptions of God are worthy, since they fulfill the needs of people at different levels of development. Each serves its purpose, and then becomes lost in a higher conception. It is not considered possible that the whole of humanity could adopt one point of view and judge others false. This position might well lead to the question, "Where does this end?"

IN answering this, I should like to bring forward the theory of God and Reality as expounded by our greatest sage, Sankara. This is technically known as the doctrine of *Advaita* or non-dualism, and is held to be the highest truth by a majority of Indians.

The struggle to go beyond the finite, the perishable and the changing, to seek the real, to know the truth —all this means that this flowing stream of experience is not all. The mere effort to break through the limitations of the finite is an acceptance of the assumption that there is more. Our experience is always self-contradictory. Let us therefore examine this experience and see if there is anything in it which is foundational.

Our senses deceive us. Our memory can be illusory. Our empirical knowledge of the world is very often limited and contradictory. What the scientist says is one thing and what we perceive is another and quite different thing. Hence there must be something else which is the basis and root of all the disparate data of experience. Yet no matter how much we may doubt the content of our experience, we never doubt that the experience itself exists. Hinduism asserts that the basis of all this experience, which is wrongly interpreted by the human mind, is real. It is known as *Brahman.*

This word cannot be fully translated into English. To say that *Brahman* is reality is to say that it is different from illusion, imagination, and the phenomenal. To say that it is infinite is to say that it is not finite. To attribute any ethical and aesthetic qualities

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[1] *Svetasvatara Upanishad,* IV, 17

[2] *Vedic Hymns,* Wisdom of the East Series. (trans) Edward J. Thomas, (London: John Murray), X, 121, 1923.

to it would be to preclude from it all unethical and unaesthetic qualities. This the Indian thinker is not prepared to do. Therefore since men need the symbolic images of language to express thought, it is held that *Brahman* can only be indicated by negative language. Negative words never stop with mere negation: they always imply an affirmation. When we say that this object is not a table, we mean that it is something other than a table. Similarly, when *Brahman* is described in negative terms, much more is implied. *Brahman* is not spatial, since it is everywhere; everything depends upon it and refers to it. It is not a thing, hence it has no spatial relations. It is not a cause, since causal relations involve temporal changes. *Brahman* has no genus, no qualities, no relations. It has no similarities and differences. It cannot be said even to have internal relations, because this would mean that it is possible to differentiate it within itself. There is no within or without in *Brahman*. It is one without a second.

Note that all the words used in this description are negative. But what do we mean by something that is neither being nor non-being as understood within the limits of our experience? To call this a personality is to limit it to the conditions to which ordinary personality is subject. A personality can only be understood through reference to a non-personal world. Any other use of the word is illegitimate. *Brahman* is certainly not such a personality.

What, then, is man to do? This *Brahman* seems to be almost nothing. In the upward flight of man's search for truth, he seems to have reduced the most cherished idea of man viz., God, to a mere empty dream.

All world scriptures speak of a God who is the creator, sustainer and destroyer, who is good, beautiful and without whose grace man can never be saved. What becomes of this familiar personal conception of God if reality is *Brahman?* In answer to these questions, the great seer Sankara replied that the question of God's existence is absurd. If God exists then he must exist as do other objects, which reduces him to the level of the finite, or he must be part of everything there is and thus be submerged in an unsatisfactory pantheism.

LET us examine some of the usual arguments offered as proofs for the existence of God, and see wherein they are wanting. The causal argument fails even within our own limited experience. To expect an uncaused cause within the scheme of causal relations is a contradiction. To draw the inference of an infinite from the finite is logically impossible; application of principles of the finite leads only to the inference of a finite creator. The first cause must exhibit the unity and order of the objects of experience, since it is from experience that we seek to establish a relation between the finite and the infinite. Thus if God is the creator of this world then he must be within the space-time framework, i.e. superior, but somehow still human.

The argument based on morality is equally unsatisfactory. To expect that the whole of this world is adapted to the needs of man and that a benevolent and good God so ordained it, is to look upon God as an instrument for human ends, which to say the very least exaggerates our own importance. God seems to give value to us more than we to God. Under such a scheme, however we may twist and turn, the responsibility for evil and sin falls on God. If this is not so, then we are faced with two equally potent factors, one representing good and the other representing evil. Again, a perfect God does not require man for his satisfaction. If that were so, he would only be another person like ourselves, incomplete and seeking to satisfy his wants. Perfection and the need for satisfaction cannot exist together. Thus, multiplying the arguments, it can be shown that the traditional way of explaining God is not very acceptable. These proofs may, at best, tell us that God is a possibility.

The Hindu differentiates between the idea of *Brahman,* as previously described, and the idea of God. *Brahman* by its very nature is unknowable by any human category, although eventually experienceable because it is ultimate. That it is the real cannot be doubted. God (or *Isvara*) is not an axiomatic, self-evident truth. It is an empirical postulation which is practically useful. There is indeed a rational and psychological factor in man which compels him to postulate the personality of the divine. At this point, we seem to be faced with an apparent contradiction. On the one hand there is *Brahman,* impersonal, non-dual, qualityless. Yet at the same time, the nature of man demands a God as the center of his devotion. Recognizing these two contradictory ideas, the Hindu maintains that the personal God is the manner in which we human beings, with all our limitations, can think of the highest Reality, *Brahman.* The indeterminate becomes self-determined for thought. God is therefore a rational postulation by man in his attempts to understand reality. Such a postulate remains only at the phenomenal level. It is this kind of thinking which makes Hinduism so very catholic, for it recognizes that some anthropomorphic definition of God is necessary to men.

Thus, in Hinduism, when the emphasis is laid on reality in and for itself, the term *Brahman* is used. But when the effort is made to explore its relation to us, we see it as *Isvara.* So we accept the obvious fact that in the search for this relation, mankind conceives of God in various ways, at various levels, and in various directions. Every one of these is true, because, after all, they are all expressions of one and the same force at work on different levels. Names and forms do not matter. These are merely symbols to express the one Reality which underlies all appearances. One of the verses of the Hindu scriptures says, "The man of action finds his God in fire (energy), the man of feeling in the heart, and the feeble minded in the idol; but the strong in spirit find God everywhere."

If this state of affairs were to rest here, however, it would be very unsatisfactory for man. Because of his fundamental inherence in that Reality which is

indicated by the word *Brahman,* man must ultimately realize this unity. Man's view of God depends on the kind of man he is; temperament, training, and tradition determine to a large extent our view of God as personality. But the final search goes beyond such limitations of the ego and realizes the oneness of man's self or soul with *Brahman.*

Psychological and spiritual training gradually weans the man from his egoistic preoccupations and helps him to realize his true nature. It is in this realization alone that man's salvation lies, not in any post-mortem state. Realization is a timeless experience of the Real that can happen here and now. Its only restrictions are to be found in the development and capacity of the individual human being.

THE question may now be asked, if there is only this non-dual *Brahman* how can we account for the world of plurality? The answer is, we cannot. That plurality is a fact of experience cannot be denied. Yet it cannot be real since it involves self-contradiction and is not self-explanatory. Space, time and cause, which are the forms of experience, are not satisfactory principles of explanation; therefore they are also unreal. Since things cannot be both real and unreal, the Indian philosopher would say such a state of opposites is inexplicable. Without shifting the ground of the argument, it is impossible to explain the one in terms of the other.

Let me give the traditional example. When a man sees a rope in semidarkness, he mistakes it for a snake. His snake experience is real to him as long as that experience lasts. But once the light is flashed on, the snake is seen to be only a rope. Both of these are real experiences. Similarly, Sankara argues, the world of plurality is real as long as a man is within it. But when he gains true knowledge and realization, then all is *Brahman.* The latter knowledge supercedes the former but does not negate it. From the point of view of ultimate Reality there is no problem at all, since it is non-dual. From the point of view of the world, the problem cannot be answered, for it does not lend itself to logical analysis.

This is the view of most of the devout Hindus. Since it guarantees respect for human reason and does not require us to accept God on faith alone, it precludes sectarian quarrel.

The only appropriate end to this brief discussion is a quotation from our ancient scriptures: "May all cross safely the difficult places of life; may all see the face of happiness, may all reach right knowledge; may all rejoice everywhere."

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Bhava vrtta . . . .

"Creation Hymn"

Non-existence (asat) then was not, nor Existence (sat); neither Firmament (rajas), nor Empyrean (vyoman) there beyond;
What covered o'er all (avarivar) and where, or what was *any* resting-place (sarman)? What were the water (ambhah)? Fathomless abyss (gahanam gambhiram). 1
Then was neither death (mrtyu) nor life (amrta), nor any fetch (praketa) of night or day;
That One breathed (anit) breathless (avata) by intrinsic-power (svadha), nor other was, nor aught there-beyond. 2
In the begining (agre), Dark-Inert (tamas) was hid (gutha) by Dark-Inert (tamas). This all was fluid (salila), indeterminate (apraketa):
Void (tucchi) by void (abhu) was overlaid (apihita): That One was born (ajayat) by the all-might (mahi) of intension (tapas). 3
In the beginning, Will (kama) arose (samavartat) therein, the primal seed (retas) of Intellect (manas), that was the first:
Searching the heart (hrd) thoroughly by thought (manisa) wise-singers (kavayah) found there the kin (bandhu) of Existence (sat) in the Nonexistent (asat). 4
What trace was stretched across below, and what above?
Seed (retas) was, Allmight (mahimanah) was; Intrinsic-power (svadha) below, Purpose (prayati) above. 5
Who knows it aright? Who can here set it forth? Whence was it born (ajata), whence poured forth (visrtih)?
These Angels (devah) are from its pouring-forth (visarjana), whence then it came-to-be (ababhuva), who knows? 6
Whence outpoured (visrtih) this came to be (ababhuva), or whether one appointed (dadhe) it or not.
He who is Over-Eye (adhyaksa) thereof in uttermost Empyrean (vyoman), he knows indeed, or knoweth not. 7

—*Rig Veda,* X 129

## Structuring the Waters of Life

THE theory of liquids is highly deficient when contrasted with that of gases and solids. A comprehensive review of all aspects of the present situation, together with a report of his own attack was supplied by Professor J. D. Bernal, F.R.S., at the Friday evening discourse of the Royal Institution, October 31, 1958. The substance is published as "A Geometrical Approach to the Structure of Liquids," in *Nature,* January 17, 1959, pp. 141-147, complete with illustrations and bibliography. The serious philosopher and, indeed, the physicist will read the original, which, in any case, could be reduced to MAIN CURRENTS requirements only if we retained the technical terms and thus defeated some of our lay readers. Therefore we discuss here possible larger meanings, instead of providing an unsatisfying brief reduction of the text.

Contemporary knowledge forces us to abandon the old circular definition of life: what is alive is made of protoplasm; protoplasm is alive. Instead we have to consider this: There is a series of self-structuring, self-sustaining and (higher up) self-reproducing functional forms in which the main characteristic is not inert material substance but *harmonic order.* Although we cannot trace an unbroken series up from Planck's action constant (a little energy, for a short time) through the pseudo-particles to electrons, nucleons, atoms, molecules and crystals — a deficiency compensated for in part by the uncertainty principle—we must admit that with atoms the series emerges from the microstate and goes on up to long chain molecules, genetic materials, viruses and so on through unicellar organisms to plants and animals. Let this be denominated the self-ordering or life sequence, and be contrasted with non-functional forms, ranging from the randomness of a gas in a toy balloon to the dark nebula in Scutum Sobieski or the Horse's Head in Orion. The nebular chaos is (in the present sense) alive with quantization in the microstate. Ages are required before the self-ordering forces of the field and the particles subjugate it. This is called evolution. We shall assume that field potentials and forces of all kinds — metric, electromagnetic, and others known and as yet unknown—are present throughout.

Turning now to our planet, the evidence is that a mantle of crystalline rock encloses a strange state of affairs—the core—where there are no electrons for resonance bonds, and hence no self-ordering. Upon and out of the mantle the heterogeneous pre-Cambrian atmosphere fluids gave rise to the salt and fresh waters of the Palaeozoic. In and out of the waters came protoplasm, to this day 65% to 90% and more $H^2O$. Protoplasm is a *system,* and not primarily a substance, although made up mainly of a few characteristic chemical elements. Unlike the natural selective forces in minerals—where the space-lattice structures allow the crystallizing rock to separate out into pure final substances by selectivity and accretion, not metabolism—protoplasm, because it is *a system in water,* can be and is a unique process which continually takes from the environment and devises (i.e. orders) what it needs for its functions.

In the foregoing terms, the importance of Professor Bernal's monograph becomes immediately evident. His subject is liquids, and for life on this planet *the* liquid is water. As ice, water is quite patently the most important of all evolutionary links in the quantized series, since as a fluid water is the vehicle for protoplasm. In other words, we do well to see how space-latticed ice and snow turns into a fluid which continues (at the molecular level) to obey quantized principles, and yet allows of more or less ordered movement, and hence makes protoplasm possible.

"A Geometrical Approach to the Structure of Liquids" deals primarily with simple liquids and especially those purest of substances, the rare gases (except helium). We extrapolate the argument to water.

The author's method is to draw planes between molecules at points bisecting the distances between molecular centers. The results are small irregular convex polyhedra determined by the calculations. He calls this "statistical geometry," and provides the mathematics for the boundaries, i.e., parameters.

We are concerned with the end result. This consists of an ever-moving fluid-plastic, ever-changing in space (hence involving space-time), a mobile lattice of figures which resemble, if indeed they are not equivalent to, the well-known shapes of plant cells. The latter are known to have a preponderance of pentagonal faces, and in general to have shapes determined *not* alone by mechanical forces by any means, but in part and finally by forces within as well.

Thus this study establishes the beginnings of the geometrical connections between molecules of a fluid (treated as stereometric units) changing according to probability and not chaos, not arranged with others in rigid chemical bondage, nor yet solely in senseless motion, but providing that unique state between the solid and the gas ideally needed (in the case of water) for protoplasm and cells as processes, which in turn are needed for self-functioning forms. We thus draw one stage nearer the field forces, and the geometry of the higher life orders, in a series as yet only at molecular and cellular levels, continuous with and

lying between self-ordering molecules and self-ordering cells.

We have here a contribution of classical value, as significant on the theory side as the crystallizing of the tobacco-mosaic virus was in empirical data for the philosopher of nature.

—*F. L. Kunz*

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## Science at the Core of Knowledge

THE November 1958 issue of the *Bulletin of the Atomic Scientists* was principally devoted to a discussion of the relation of science and education. In the introductory editorial by Eugene Rabinowitch the problem is defined: In order to feature science more properly in the school curriculum, classic humanitarian studies will need to be integrated with the sciences, so that science is taught not as a separate system of facts and ideas, but in relation to other disciplines that traditionally mold social attitudes. Whether this is a desirable aim, and, if so, how it may be achieved, were questions asked by the *Bulletin* of a number of scientists and educators.

There is no possibility here of reviewing all the interesting points raised by the contributors to this discussion; the reader is referred to the *Bulletin* itself for this purpose. Some indication of the scope of the discussion may, however, be given by reference to three of the articles.

In "Liberal Education in a Scientific Age," Bentley Glass defines the two primary functions of education: first, to transmit from each generation to the next the knowledge requisite to power and the extension of power (the technical aspect), and second, to enlarge the comprehension by man of his place in the universe (the philosophical aspect). These two aspects are fused in science, in the development of increasingly adequate concepts about man and his place in the universe, and in the enlargement of man's command over nature through new knowledge. Since science today is man's most powerful instrument to control his environment and to arrive at truth in respect to the world of matter and energy, it is obvious that education should reflect this central reality of modern life. Yet, as Dr. Glass says, "It is a basic fault of our present theory and practice of education in the United States that the natural sciences stand apart from the social and humanistic studies. . . . If the natural sciences are to become indeed the core of the new curriculum, they must unquestionably sacrifice something of their forbidding character." He recommends that science courses avoid unnecessary jargon, and aim not so much at the training of the technician as at the liberal education of the citizen. Science should be regarded as "simultaneously social study and creative art, a history of ideas, a philosophy, and a supreme product of aesthetic ingenuity," for the graduate who has missed this experience loses the basis for a rational judgment of today's crucial problems.

Dr. Glass disclaims the notion that in making science "the core of the curriculum" certain studies should be emphasized to the exclusion or detriment of others. Rather, science should be considered as that which gives the whole its intrinsic meaning and its solid structure. The remainder of the curriculum must be more fully and consciously related to the place of science in human life—and this aim must be realized not only in the college years, but in the secondary and elementary schools as well. An enthusiasm for science, and an appreciation of the distinction as well as the limitation of its methods should be engendered early. For this, of course, the amount of science taken is not so important as the way it is taught.

The problem of integrating the teaching of the sciences with the rest of the liberal studies, however, depends only in part upon the reformation of science-teaching. Even more is to be done in the remainder of the liberal curriculum. Dr. Glass makes several recommendations: In English, emphasis on grammar and spelling might be supplemented with a greater consideration of logic and the nature of deductive and inductive thinking. Fine examples of scientific writing can be fitted easily and naturally into the curriculum. In language study, it may be noted that Latin and Greek are extremely important to scientific language. Scientific words for the same phenomena are nearly always the same, so that scientific articles are the easiest of material to translate, and could be used more widely in language study. In the teaching of history, perhaps the greatest changes will be needed. Since human history is only an infinitesimal portion of the history of life on this earth, a better perspective might be gained by treating the prehistory of man as a natural culmination of animal evolution. Conventional political and economic history becomes relatively less important as one focuses on the ascent of man, and the expansion of human ideas. In any such treatment of modern history, the growth of science and the development of scientific concepts must be forced to the center of the stage. Political economy, sociology and political science, among the social studies, must also turn more attention to such matters as the sources of power, supplies of raw material, abundance of food, and the relation of these to the growth of population, for science creates problems in all these fields which cannot be ignored.

In the same ways, the importance and relevance of science to the fine arts and to music must be made clear. As to philosophy, the philosophy of science is well-recognized and fundamental, but more important is the need for every man to create for himself an integrated view of himself and his world. In carrying out that function, philosophy must work within the framework of scientific knowledge and concepts. As Dr. Glass points out, what we need today is a dynamic philosophy that will embrace the rights and the needs of the individual and also the welfare of society. Finally, since science reveals truth, but never the whole of truth, and since it is the product of the human mind, its powers can be used for evil as well as good ends. For this reason, while science must permeate

the study and teaching of each of the arts, humanities and social studies, these in their turn must modify, enrich and protect the sciences.

The title of Joseph J. Schwab's article, "The Teaching of Science as Inquiry," indicates his concern for the primary experience and for recognition of the need for the stimulus of personal involvement in problem-solving. His argument for a change in science teaching methods is based upon the fact that science itself has changed, and that a new view concerning the nature of scientific inquiry now controls research. Research now goes forward on the view that the concepts which control inquiry are to be treated as instruments of inquiry, not as assertions about the nature of things. These concepts may be chosen by the inquirer with considerable freedom; they are not uniquely and objectively given by the subject matter. In this light, scientific knowledge is seen to have three properties: its special reference, its revisionary character, and its plural character. Its special reference to specific subject matter makes it inevitable that conclusions are unintelligible or misleading unless they are known in the context of inquiry. Its revisionary character implies that scientific knowledge grows, and that this growth necessitates change of principles of inquiry. Older formulations are replaced by new knowledge, not more "right," but more comprehensive and more discriminating. The plural character of scientific knowledge indicates that different approaches to the richness and variety of a subject may give rise to distinct bodies of knowledge which may illuminate the subject in radically different ways.

These three properties of scientific knowledge necessitate an education quite other than the dogmatic authoritarianism which has been inherited from the study of nineteenth-century science. Yet this is the kind to be most often found in American schools today. After considering the reasons why a change is necessary, Dr. Schwab presents his suggestions for the teaching of science as inquiry. In such a method, the student undertakes inquiries as the route to the materials to be learned. Laboratory periods and the traditional lecture are converted, so that materials and methods come to exhibit the course of inquiries. In other words, the student is called upon to dissect the records of scientific inquiry in order to distinguish its constituent concepts, assumptions, data, etc., and understand their roles. The conclusions of science are never presented as inalterable truths; rather, texts are adjusted to include exposition of alternatives, difficulties and doubts attendant on the inquiry. The uncertainty involved in selecting the most fruitful concepts is emphasized. Discussion can invoke an increased participation by the student. Finally, original research papers, actual reports of inquiry, can become the foundation of a curriculum, either as sole material, or as units to replace parts of traditional material. In these ways the dynamic and changing character of science may acquire reality for the student.

In "The Intellectual in Action," Harold Taylor treates the problem of education more broadly, in the context of American life. He sees current suspicion of the intellectual to be founded in the doubts of the existing situation which he arouses in people who do not think for themselves. Yet the kind of confidence which a person or a country needs is that which has no fear of being questioned or criticized. And Dr. Taylor defines an intellectual as one in whom self-confidence is based on the belief in knowledge as a guide to action, so that the ideal may be created from the materials of the real. The American intellectual may be found among writers, composers, educators, scientists, economists and businessmen, but all of these are not intellectuals. Only those who are interested in ideas for their own sake may properly be so called. Otherwise they are merely practitioners or technicians in the field of ideas. Anyone who hopes to make a contribution to his society, however, must have some degree of interest in ideas, and therefore, according to Dr. Taylor, education must provide full opportunity for developing the ability to share in the intellectual life of society. This does not mean that it is expected that everyone can or will share the interests of our most advanced intellectuals, but rather that the dissemination of ideas and the enjoyment of art on a mass scale will raise the general level of intellectual interest and information. Dr. Taylor believes that mass culture does not debase standards but instead affords new possibilities for the creation of higher standards.

For these reasons, it is imperative that the colleges concern themselves with the life of the intellect and the imagination, and remind the public that the purpose of education is to develop people who can think and act for themselves. Values must be seen, enjoyed, and savored by teachers and students alike. The experience of art and of idea generates its own response in the individual. It is only through direct experience that one can know what it means to be captured by a feeling or an idea.

The virtue of nonconformity cannot be cultivated deliberately. Any such attempt to break through conformity by changing a present situation only results in new forms of conformity. This may be seen in the grip which modern art has upon modern taste. The concept of opinion-makers has transferred itself from business until now it is assumed that there are influential leaders in all fields, from art to politics, who mold public attitudes by their techniques of persuasion. Dr. Taylor feels that the conformist circle cannot be broken through if we continually try to know what other people think before we say what we think. Public figures whose views count and whose opinions are respected "form opinion" because they are thinking freshly and well, independently and soundly. The remedy for conformity, therefore, lies in true individualism, in the independence which refuses to be led away from its central purposes either by the attractions of material success or the disapproval of the public.

Dr. Taylor feels strongly the need for the full acceptance of the intellectual and the artist by our own government. Our richest resources are our cultural

resources, but we neglect them shamefully through our lack of a coherent cultural or educational policy. The creative arts and sciences, together with education, are underfinanced and undersupported, because we do not yet realize that the free exchange of ideas is the most important single factor which can ease international tension.

We are at the beginning of what amounts to a cultural revolution made possible by science and education. But we could lose the revolution easily by failing to recognize the content of our own progressive tradition of individualism, liberalism and humanitarian democracy. Since these center in the challenge to the American mind to express itself in new forms, the educated man, the intellectual in action, has a central part to play in the development of original ideas.

—*E. B. Sellon*

## Art as a Self-Integrating Process

"WHAT is design but order, with its concomitants harmony, efficiency, and beauty? Is not the designer's role, in essence, the making of order out of chaos, coherence out of incoherence?"

In an article entitled "Design for Tomorrow," which appears in *Art Education* for December 1958, the author, Helen Cabot Miles, approaches the concept of the laws and principles of design as laws of life. Miss Miles, who is an art teacher, contends that art activities must not be considered as "frill subjects" but rather understood in terms of their creative and integrative values; and from this point of view she discusses art teaching as a means of enriching, not merely the art-attitudes of the students, but their wider understanding of themselves as individuals and as members of society. Miss Miles writes:

"Truly creative art activities might be viewed as a means of bringing about a relationship between the deeply personal, non-verbal inner world and the public, impersonal world of form, between *meaning* and *symbol*. As such—through projection or objectification—they provide one means (of course there are others) of establishing contact with the Deep Center or Self. This I think we need to know.

"As antidote to the trend toward distintegration into chaos, we as human beings need to find out more and more of the nature of the potentially reconstructive force inherent in an application of the laws and principles of design to the living of a life of harmony, of full and effective functioning, of beauty. Often as we have said these words, to what extent have we pondered deeply over their real implications?

"Take for one suggestive example *Rhythm*—repetition with alteration, the balanced interplay of in-and-out, fundamental, as in breathing, in the cycles of night and day, of waking and sleeping, of summer and winter. . . . To what extent *do we purposefully lead our pupils* toward balanced use of their time? ("Get busy; don't waste time," we are likely to say, implying that only in visible activity lies value. Perhaps we should be doing them a greater service by teaching them the art of daydreaming!)

"Methodical and persistent contemplation of the other design laws yields up equally helpful clues to necessary alterations or amendments to our customary way of life . . .

"As antidote to chaos, since the artist-teacher holds as part of his stock-in-trade the key to meanings-behind-forms, *we must*—if we are to lay claim to that title—perfect our understanding and use of this precious, sometimes overlooked tool. Thus enriched, we can deal more purposefully with another cohesive, integrating concept. For my part, I hold that an approach to visual design through the world of meaning, emphasizing the *communicative* aspects rather than the formal elements may lead to relative mastery of those elements in a minimum of time, and also bring in its wake such rich corollaries or fringe benefits as increasing enthusiasm for design, increased self-confidence, self-esteem, and ability-to-cope.

"As we ourselves give more attention to symbols to the rich meanings inherent in the language of line and form, texture and color, sound and gesture, we prepare ourselves to lead students with us into a true inside-out (not learned from book or lecture, outside-in) appreciation of the great conceptions, expressed through art, that constitute a rich part of our cultural heritage. As we become co-explorers with our students, the yield will be rich for all concerned.

"As our last antidote-to-chaos, we must synthesize constantly within ourselves and among ourselves. We must reach widely into our government, into sociology, anthropology, psychology and the natural sciences, into literature, philosophy, comparative religions and economics, seeking out relationships, thereby becoming personalities. Then, enriched in our own understandings, we may transmit—by osmosis if by no more tangible means—a sense of relationship that makes pattern out of confusion in the lives we all must live."

The author points out that life itself is the truly great challenge to the artist, and considers environment and the living beings interacting with it as the materials out of which designs are daily being wrought. All who envision teaching as a form of art expression, she contends, must be able to look beyond the form and line and color, to gain a newer, fresher concept of themselves and of their tasks as teachers, and to achieve a fuller awareness of their responsibility, as individuals, as teachers, as members of society.

"*We are* an essential life-giving part of the educational process on every level," Miss Miles concludes, "when we see that process as a synthesis of experiences, or learnings, that must be designed to develop *qualitatively as well as quantitatively;* when we understand that the physical-emotional-mental aspects of the human being need to be kept in equilibrium, and that through education of the emotions, and through the development of intuition and the creative imagination we are pointing the way toward acquaintance with integrating Self."

—*Alan Mannion.*

# NEWS AND NOTES

AN essential difference between the Russian government and our own is this: they hold that a philosophy of nature is indispensable, but have (officially) a poor one; whereas we recognize no such over-riding need, and suppose instead that ideals and goals are good enough. Ours is the weaker of the two positions; we are free to change, but we *don't try to do so.*

The dangerous consequences of this indifference are now so obvious that there is no need to pursue here any except this one of them: The central problem of cosmology has become the most urgent—and remains the most neglected — of all political issues. The preceding sentence has probably no meaning among Congressmen. It *has* to become meaningful to some effective institution in this country.

The central problem in cosmology is—and always has been—to improve our knowledge of the relation between order and disorder in the universe. In terms of human conduct this spells right and wrong: with the emerging order or against it. For societies this issue is one of life and death. If natural orders, and those appropriate to man, are known, obeyed, and used in required degree, then society may flourish. If the mass of ignorance about this essential is too great, or the rules of the universe are deliberately violated, society withers away as expedients to meet chaos supplant wisdom to use order.

To some this age-old truth may not seem to be self-evident, because simple societies survive on knowledge that has very little penetration, relative to our own. But a price is paid by them; they remain primitive. Today we are sophisticated; but we are also sick. The social choice is: know little and live by instinct in a jungle on the Orinoco; know much and live by knowledge, or die.

Probably no nation — certainly none in historic times—has been so complex, rich, literate, productive, technically skilled, and endowed with natural advantages as our own United States. There is also little doubt that our political Founders believed they were reflecting in our basic law what they knew of the orders of the universe. The phrase "checks and balances" used of the executive, judicial and legislative functions is, in fact, a reference to mechanics: a machine designed to run smoothly, with governor, brakes, well-turned fly-wheel and so on. As of today we cannot press the analogy home, because the American machine is now complex, appears to have lost its governor, and seems to be undergoing remodelling by Rube Goldberg. Knowledge was less and life simpler in 1800. Hence the machine could be and was the ideal. It became ever more so up to 1860, when the philosophical climate became charged with Darwinian chanciness.

Mechanism is today on a sputnikal spree; nevertheless mechanics is only a subsidiary aspect of physics. What we today could (as a society) know of the orders of the universe is vast in amount and absolutely new in significance. Yet no group does anything *systematic* about this change, even though education, taken in its entirety as the most important of all our institutions, is admitted to be in desperate straits.

Presidents of colleges and universities, officers of funds and foundations, authors of books, editors and every other kind of wielder of power and of prestige, gather on radio and television, in magazines, conferences, symposia, and before Congressional committees, to talk about everything but this issue. The nearest anyone seems to get to it is to repeat what has been a platitude for about forty years: "We must educate as much for life as for technological competence." But what a (presumably) good life may be remains largely undefined, except in the vaguest terms. That science may be able to contribute something valid to the study of the laws of life, insofar as they are also the "Laws of Nature and of Nature's God," is scarcely considered.

This is the great failure of our times, and the neglect is leading us to the abyss. For education, nearly everything else is being considered, and even being done, after a fashion. But for this one block of essential research, nothing is being done, even though both methodology and a program are available to implement it. Obviously, the pertinence of this new knowledge *vis à vis* domestic and world settlement has not been understood by those who command the needed resources.

Speaking of certain obtuse minds among northern politicians during the crisis which became the Civil War, Lincoln remarked that those people would have to get sicker before they could get better. It may be necessary for us, as a people, to sink deeper in the morass of our own making before we make a real effort to pull ourselves out. Perhaps we need to be more poisoned by noxious fumes, more weakened by adulterants, our humanity more betrayed by our fancy for fictional violence, our taste more degraded by our easy acceptance of the vulgar, the specious and the valueless if only they are smartly dressed in the current style. But the worst thing we do for ourselves, as a people, is to deny our children the fulfillment of their natural integrity, through a school system that drifts more and more into the shallows of behavioral data instead of moving out upon the buoyant philosophical deeps. We do not permit young people the opportunity to gain insight into themselves and into nature. Thus we perpetuate the evils of our own times into the future, since we give the citizens of that future no clue as to how the problem may be solved. We have

underrated our children, exploited them, and starved their minds.

Even now, when the problem is beginning to be felt and vast sums are being spent on piecemeal improvements in education, no effort is made to win even the thinnest reticulate beginnings of a consensus about the source and nature of the orders of the mind. Yet, with the help that science can give, these principles can now be defended and documented, so that such a consensus is a realizable goal. These new discoveries include the reality of the non-material, the causal role of field forces, the tendencies toward supremacy of order in nature arising from the microstate and from the quantized radiation field, the continuity of what are essentially quantized values and principles, from the crystalline world downward through molecules and atoms towards Planck's action quantity and upward through viruses and genes to plants and animals, and finally the Gestalt and other conceptual psychological resources of man.

Science today confirms, rather than denies, that man's life is meaningful, that love is his greatest power, that insight and wisdom are the only guarantees of his freedom and his fulfillment. It is tragically absurd and meaningless for our society to sink ever further into a morass of sensate materialism which our principal contribution to world culture — our science—so emphatically denies.

War is impractical, and therefore will be outlawed. But peace is not achieved by the mere abandonment of war under duress; it must be labored for more diligently. World settlement calls for studies of order upon which to rest world government by consent of free men. Merely to say that this is our goal, and that we shall devote all our resources to the effort, would rally the support of millions now wavering and uncommitted. What is more, it would offer to the populations we now call our adversaries a corrective for the materialism we charge them with, and show them that we ourselves have turned toward a larger vision.

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The great issue raised so lucidly and met so simply by Professor Sarasvati Chennakesavan on page 85 of this issue has specific consequences, to be seen in the thought and conduct of the Indian people. To trace out the implications would call for a review of each of the three pairs of *darsanas,* or formally established modes of insight—a considerable task which we hope our author may perform some other time during her stay in this country. Gautama Buddha is a transcendent instance of that empirical testing which has given philosophy in India correctives for excesses in verbalization and speculation: in youth the study of the sciences (Nyaya-Vaishesika), in maturity the practice of self-discipline and the attainment of insight (Yoga-Sankhya), and then, after decades of ministry and teaching, the final release promised in the *Purva* and *Uttara Mimansas* (the Lesser and Greater Exegeses)—the Nirvana of Brahman attained.

Remarkable contributions to the evidence for the reality of the infinite are beginning to be available in contemporary sciences. Chemists and physicists more and more rest their powers over nature upon uniformities which, in turn, are founded upon the infinite: the infinitely small (or point-center) in physics, infinite dilution in chemistry, and so on. Herein we see operating, in formulae, what in Siddartha Gautama was revealed as experience, and through Shankara was stated as an uncompromising monistic (non-dual) metaphysics unequalled in its penetration. —*F. L. K.*

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Nepal, an independent country which lies between Tibet, India and Sikkim, exhibits a rare synthesis of Indian, Chinese and Tibetan cultures, wherein Hinduism and Buddhism have co-existed since Guatama Buddha was born there 2500 years ago. Places sacred to each of these ancient religions exist side by side and even within the shrines themselves there is displayed a blending of Buddhism and Hinduism without clash or conscious inconsistency. There has, in fact, been considerable interchange of ideas and customs. Hindus and Buddhists live together in peace and mutual tolerance, as do their different sects. The Shaiva and Vaishnava sects of Hinduism, for example, have their principal temples at the same place, and on the Swayambhu mount the Mahayana, Vajrayana and Hinayana forms of Buddhism are all represented. The recent opening of Nepal thus offers a unique opportunity to study the effects of such a religious amalgam through the art forms of its temples, monasteries and stupas.

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At intervals it is desirable to acquaint new, and remind older, readers of MAIN CURRENTS of its fundametal policy, whose broad aims are stated in its masthead. This objective, it is admitted, can scarcely hope to be fully realized until a long-standing need in education is met through specific research which, unfortunately, has not as yet been systematically undertaken. Until those studies are under way, writers concerned with a good contemporary philosophy of nature and of man are compelled to halt short of the goal, which can be won only through a stage-by-stage consensus rested on shared knowledge, not opinion or mere speculation.

We are honored to be able to present the thinking of men who, at least, know that there is such an attainable goal and how it should be reached. We feel privileged, also, in that we are rallying an ever-enlarging circle of readers who comprehend the nature of the problem, and its over-all significance for our culture. For those many hundreds who have joined us as subscribers in the last two years, in particular, the colored insert bound into this issue may add definiteness to their understanding of the journal's policy, and the reasons why it serves the Foundation for Integrated Education.

It may also assist them in making that policy more widely known. Reprints are available and will be mailed singly or in quantity, upon request.

## The Universe as Process and Events

IN this volume will be found the first serious attempt to reformulate the more significant findings of all science in terms stipulated by the events and the newly-established theory that came to a climax in the nineteen-twenties: *The O-Structure,* an Introduction to Psycho-physical Cosmology, by C. C. L. Gregory, formerly Director of London Observatory, and Anita Kohsen, (Published by the Institute for the Study of Mental Images, Church Crookham, Hampshire, England, January 1959, 109 pages, 40 of notes, and blank pages whereupon the reader may compose his own index; 21/-).

It is probable that this book will deliver the needed shock to the thinking of our times, and enable philosophers and teachers overwhelmed by data to make a serious start with the long-overdue duty of developing a concensus.

We have lived far too long with a variety of great issues not only left undecided but put even beyond serious consideration. Operationally, the physicists for years have employed a four-dimensional system and cannot do without it; but who suggests that space-time is as real as the sensed world and (of necessity) is a matrix governing events in general? This book is the first sign that it is being taken seriously outside physics. A hundred years have passed since the doctrine of the evolution of forms was enunciated, and for over fifty years reformulation in non-mechanistic terms has been possible. Yet no one soberly asks the questions prompted when space-time and genetics are not only considered as individually established but also jointly meaningful. Since the quantized series of pseudo-particles, atoms, molecules and crystals are functions of a space-time which, at the level of the crystal, becomes space only, then are we not the comparable microcosmic events in genetics in fee to space-time?

The failure to organize what we know stems in part from lack of intellectual courage. Zero, one, two and three-dimensional properties are matters of fact. No one denies the existence of shadows, or axes of rotation. Even a housewife unconcerned with geometry realizes that wet laundry should hang on lines, dry laundry be stacked on shelves, and cookies closed in boxes. But space-time is beyond sense perception and so we are afraid to take it as real, even though physics cannot do without it. The authors of this book, however, have no fear, and follow where the facts of the argument lead them. They do not ask us to play about with mere three-dimensional rearrangements of pieces of a puzzle which fall into place in a higher matrix.

It has long been obvious that in order to bring about a re-integration of all knowledge in required contemporary terms a brittle eclecticism operating at descriptive levels will not do. Someone has boldly to assume not only that space-time is real, but that if a five- or a six-dimensional universe is the minimum called for—as is the case in physics—then let such a universe be stipulated and its properties used to draw into one meaningful structure all that is known.

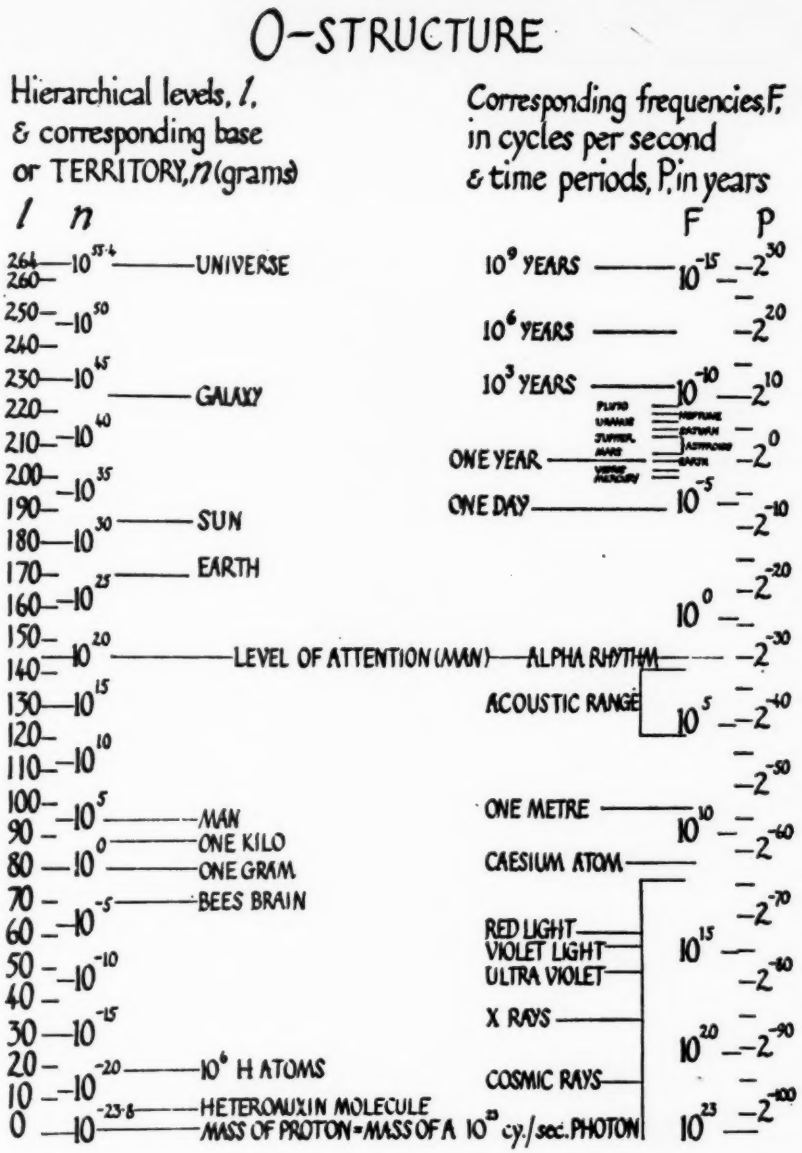
It is precisely this which will be found in *The O-Structure.* It is a strictly scientific endeavor which accepts the non-materiality of the cosmos and treats forms (including human beings) as events that are functions of the general properties of a universe. More remarkable than the courage, competence and resources of the authors is the manner in which they re-order material from every hitherto-separated department of science. There is scarcely a backward glance at the traditional, pre-1900 philosophers. The reader will have to say for himself (as in the case of persons treated as O-points) "Here Leibnitz, the Hindus and others preceded us."

The title of this book derives primarily from the new physics which has, in effect, abolished matter as something which occupies space, and supplants it with concepts of processes or related events which are rested fundamentally upon particles, pseudo-particles and O-points, in a matrix. The forces and velocities and distances which determine the structuring are basically resonant and harmonic. The new physics prescribes a highest velocity (light), a minimum entity for events (Planck's constant, a little energy for a short time), and, in place of matter, a "thing" neither substantial nor self-existing, since it is the effect of force-fields and non-material realities.

This knowledge implies, of course, vastly more than physics actually supplies, and *The O-Structure* is a successful first account of the facts and the implications. The authors treat man himself as an event in the world process: as potential person, and as ostensible person. There is also the morbid person (pages 92 to 109). These exist in a universe which, being a going concern, is reasonable (in a probability context), and hence an informational system.

The volume opens with discussions of five outlooks. The first is that of the technologist, the artisan, the artifact-maker; the man who works by making models, including mental models. Second is the astronomer, who (unlike the teachnician) cannot manipulate the objects he studies, and who therefore, we may say (without intending offense), has to try to *think.* Third, there is the mystic who is called upon to contemplate a source, and has no occasion even to claim to be wholly rational (here *The Imprisoned Splendour,* by Professor Raynor Johnson, and the authors William James, Radhakrishnan and others are noticed). Fourth is the gamester, who as such needs no skill, but who has become a very respected member of society with the rise of probability. And finally, there is the naturalist who, in these terms, has to take all things into account, the astronomer being to him part of astronomy (p. 37).

Part II is concerned, first, with world models. The authors have been watching for years the continuing failure to order all that macro- and micro-physics afford us. They use especially Eddington's *Fundamental Theory,* drawing upon the philosophical outlook also of Professor H. Dingle, A. N. Whitehead and others, but invariably dealing with the data, and not arbitrating the opinions of others. Their marshalling includes scores and perhaps, in the background, hundreds of significant features from biology and psychology. These are then




In studying the O-Structure tabulation of the universe, the reader should bear in mind that it is polydimensional and hence what is shown here are but indicators, in space and in space-time. In the table the *n* column on the left arranges all natural-functional masses, from the proton at the bottom of the scale to the total physical universe. In the text each is treated as the *territory* in which that unit in the hierarchical order *occurs*, the masses being an index of the place of each in the physical system only. The other (or *l*) column on the left arrays what the authors call the height from which the *functioning* of the entity proceeds. This array, then, refers to the specific place in the psychophysical system held by these various entities, thus assigning to each a rank in the superphysical and polydimensional domain of the kind suggested by Eddington's planoid, in *Fundamental Theory*. This, the relatively real or functional ordering, contrasts with the physical or even space-time place with which it is associated. On the right are the frequencies in cycles per second and the equivalent time periods in years at each entity level. The human level is $10^{20}$ grams for the level of attention of man as betrayed by the alpha rhythm (as recorded in an electroencephalogram) on the far right. Because of its significance to us, this example of man has been completely interconnected across the diagram. Other instances of specific meanings will be found in the text.

treated as means to the ultimate question: What is man, as a psycho-biological creature, and how is he embedded in this universe? How does it communicate itself through and to him? All the major issues, such as "What is consciousness?" get remarkable answers.

The authors modestly conclude with these words (p. 109): "This book presents an outline of what is believed to be a possible basis for a new unified axiomatics of science. It is hoped that sympathetic readers will forgive its crudities, omissions and other numerous defects consequent upon the inability of the authors to cover at all effectively the very wide field that must be considered.

"It is believed that the book might have been greatly improved if its publication had not been so hurried. Not until it has been considered by experts in more than one discipline can it be said (it is believed) whether it will prove to be useful or not. If it should prove useful, then it would have been a pity if time were lost improving the writing and developing the various proposals.

"The authors are filled with the hope that a constructive beginning has now been made, and that this will quickly be followed up and lead to an improvement in individual and international health and understanding."

—*F. L. Kunz*

## The Three Natures of Man

"Is there a possibility that rapid changes in our deeper probings into the structure of our nature as human beings may make possible not only some amelioration in the world crisis but a series of steps important in the handling of future crises?" Gardner Murphy, in his book *Human Potentialities* (Basic Books, 1958, 340 pp, bib., index, $6.00), poses this question, then calls upon psychology, anthropology, sociology, biology and history to set forth suggestions as to how the question might be answered in the affirmative.

Dr. Murphy structures man into what he terms the "three human natures." The first is organic human nature, a system of biologically given dispositions, instinctual drives, delight in the environment, and general learning ability. The second human nature is that of acquired tastes and cultural patterns which have become standardized and transmitted as a basic mold for life. The third is the creative thrust of understanding, no longer limited to the elite few, but demanded by men and women everywhere. There are many conflicts among the demands of these three natures.

The second human nature, or cultural man, tends to develop into rigidity through what Dr. Murphy terms "canalization," a process whereby the diffuse needs of childhood become channeled into specific forms. Thus the raw material of primitive needs becomes socially molded in a specific way, so that the man is not just hungry; he is hungry for a T-bone steak. This rigidity is the negation of the curiosity-driven, search-minded quest of the new which is the third human nature. Self-discovery, self-emancipation from the cultural chrysalis within which man has so snugly rolled himself lie in this third human nature. Thus creativity is seen as a normal expression of man which culture can restrict or foster.

The book gives much information already discovered as to how creative possibilities are released in the individual. Studies indicate that a stimulating mother-child relationship is important in its development, and that it comes more often to those who cultivate a "habit of creating." It can be extended far beyond specific creations and become a quality of life for the creative personality. Latent creative powers spring into being when the nervous, preoccupied waking activity steps aside in favor of a quiet integration of experience. Fantasy and dreams can be more creative than alert wakeful thought, according to Dr. Murphy.

To encourage creativity in children, teachers should stimulate their sensitivity to the mysteries in the world, rather than fill them with rigid cultural patterns. Helping them to form canalizations on themselves as creators is another stimulus to creativity. One can only agree that much deeper research into creativity is called for in connection with human potentialities, and the delivery of these findings into educational practices.

Dr. Murphy uses Kurt Lewin's concept of "life-space" in new and interesting ways. In attempting to catch a glimpse of how human nature may develop in the future, he stresses that human realities are interactions between potentialities in the genes and potentialities in the environment, so that man changes biologicallly in response to changes culturally produced in the environment. The "heart of the book," according to the author, "is the proposition that new environments create new humanness and that new humanness creates new environments." Therefore, potentialities cannot be predicted as extensions or magnifications of present qualities, for the future of man cannot but be qualitatively different.

In his gaze into the future, Dr. Murphy has worthwhile thoughts on the place science and education must take if we are to release the "third human nature." "There is no substitute for basic understanding, for the cultivation of all those cultural inventions . . . which will strengthen humanity's *desire to grasp where it is going*. Indeed, from this point of view, the distinctions among the physical sciences, the biological sciences, and the social sciences with respect to subject matter shrink daily into smaller and smaller compass, and the need for an understanding of the very structure of science itself, as it turns to all these various forms of inquiry, becomes ever more precious and ever more indispensable to life in the era into which we are moving." He asks if there are not principles of organization which run throughout nature, and are the same at an anatomical and at a socio-cultural level. If so, a unity of science may well rest on these.

The book conceives that "a serious philosophy of man's ways of fulfilling his nature must be as skeptical and as deep-probing in its quest to understand the structure of the universe as in its quest to understand man's own nature. . . . Man, being of the stuff of which the universe is made, whatever that stuff may ultimately prove to be, may have deep affinities with it, deep resonance to it, deep isomorphism with it; inevitably a tendency to become, as microcosm, what it is as macrocosm, at least in many fundamental respects, and so realize his nature more and more as he discovers the nature of cosmic structure and cosmic movement."

Dr. Murphy's tempered optimism runs throughout the book. Taking a long-range view, he holds that the only weapon in a crisis such as today's is that of sustained dispassionate thought as to man's place in the cosmos and the devices by which the perils which surround him may be overcome. His own thought has led him to the hope that "*perhaps the three human natures, still in conflict with one another, can integrate in a new emergent whole*. A life driven by the need to understand may achieve both a biological and a cultural fulfilling, and such lives might in time become the common human nature of the future."

—*S. J. Nicholson*